

CLAIMS

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2 1. Apparatus for transferring substrates to and from a
3 printer, comprising:

4 - a first storage unit for storing substrates prior
5 to a printing operation, the first storage unit
6 having a plurality of vertically stacked substrate
7 supports;

8 - a platen for receiving a substrate from said first
9 storage unit, aligning the substrate with a
10 printhead prior to a printing operation, and
11 displacing the substrate subsequent to a printing
12 operation to an unloading position;

13 - a second storage unit for storing substrates
14 subsequent to said printing operation, the second
15 storage unit having a plurality of vertically
16 stacked substrate supports;

17 - wherein the first and second storage units are
18 movable vertically with respect to the platen, and
19 in use, relative vertical movement of the first

20 storage unit and the platen transfers a substrate

21 from the supports of the first storage unit to the
22 platen, and relative vertical movement of the
23 second storage unit and the platen transfers a
24 substrate from the platen to the supports of the
25 second storage unit.

26

27 2. Apparatus as claimed in Claim 1, wherein the
28 vertically stacked substrate supports of the first
29 and second storage units are arranged to support
30 substrate trays for holding a plurality of
31 substrates.

- 1 3. Apparatus as claimed in Claim 2, wherein the platen
2 receives a substrate tray from the first storage
3 unit, the substrate being held on said substrate
4 tray.
5
- 6 4. Apparatus as claimed in Claim 2 or Claim 3, wherein
7 a substrate tray extends lengthways across the width
8 of the platen, the length of the tray being greater
9 than the width of the platen.
10
- 11 5. Apparatus as claimed in any preceding Claim, wherein
12 the first and second storage units comprise frames
13 defining an interior cavity, into which the platen
14 extends.
15
- 16 6. Apparatus as claimed in any preceding Claim, further
17 comprising third and fourth storage units movable
18 vertically relative to the platen.
19
- 20 7. Apparatus as claimed in Claim 6 wherein two of said
21 storage units are arranged on a first side of the
22 printhead, and two of said storage units are
23 arranged on the opposing side of the printhead.
24
- 25 8. A method for printing substrates on a platen, the
26 method comprising the steps of:
27 - printing a first substrate by imparting linear
28 movement to the printhead, thereby causing the
29 printhead to traverse the first substrate in a
30 first direction;
31 - aligning a second substrate with the printhead,
32 whilst reversing the direction of motion of the
33 printhead;

- 1 - printing the second substrate by imparting linear
2 movement to the printhead, thereby causing the
3 printhead to traverse the second substrate in a
4 second direction opposite to the first.
5
- 6 9. The method as claimed in Claim 8 wherein the
7 substrates are aligned by imparting relative lateral
8 movement between the platen and the printhead.
9
- 10 10. The method as claimed in Claim 8 or Claim 9
11 comprising the additional step of transferring the
12 second substrate to the platen from a substrate
13 storage unit.
14
- 15 11. The method as claimed in Claim 10 wherein the step
16 of transferring the second substrate to the platen
17 is carried out simultaneously with the printing of
18 the first substrate.
19
- 20 12. The method as claimed in any of Claims 8 to 11
21 ~~wherein the step of aligning the second substrate~~
22 with the printhead also aligns the first substrate
23 with a substrate storage unit.
24
- 25 13. The method as claimed in any of Claims 8 to 12
26 comprising the additional step of transferring the
27 first substrate from the platen to a substrate
28 storage unit.
29
- 30 14. The method as claimed in Claim 13 wherein the step
31 of transferring the first substrate from the platen
32 to a substrate storage unit is carried out

1 simultaneously with the printing of the second
2 substrate.

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4 15. The method as claimed in any of Claims 10 to 14
5 wherein the transfer of a substrate between the
6 platen and the substrate storage unit is carried out
7 by imparting relative vertical movement between a
8 substrate storage unit and the platen.

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10 16. A method for printing substrates on a platen, the
11 method comprising the steps of:

- 12 - printing a first substrate whilst simultaneously
13 transferring a further substrate between the
14 platen and a substrate storage unit;
15 - aligning the further substrate with the printhead;
16 - printing the further substrate.

17

18 17. The method as claimed in Claim 16 wherein the first
19 substrate is printed by causing the printhead to
20 traverse the substrate in a first direction, the

21 ~~further substrate is printed by causing the~~
22 printhead to traverse the further substrate in a
23 second direction opposite to the first, and the step
24 of aligning the further substrate with the printhead
25 is carried out whilst reversing the direction of
26 motion of the printhead.

27

28 18. The method as claimed in any of Claims 16 or 17
29 wherein the step of aligning the further substrate
30 with the printhead also aligns the first substrate
31 with a substrate storage unit.

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1 19. The method as claimed in any of Claims 16 to 18
2 wherein the substrates are aligned by imparting
3 relative lateral movement between the platen and the
4 printhead.

5
6 20. The method as claimed in any of Claims 16 to 19
7 comprising the additional step of transferring the
8 first substrate from the platen to a substrate
9 storage unit.

10
11 21. The method as claimed in Claim 20 wherein the step
12 of transferring the first substrate from the platen
13 to a substrate storage unit is carried out
14 simultaneously with the printing of the further
15 substrate.

16
17 22. The method as claimed in any of Claims 16 to 21
18 wherein the transfer of a substrate between the
19 platen and the substrate storage unit is carried out
20 by imparting relative vertical movement between a
21 substrate storage unit and the platen.

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23 23. A method for printing substrates on a platen, the
24 method comprising the steps of:

- 25 - printing a substrate by imparting linear movement
26 to the printhead, thereby causing the printhead to
27 traverse the substrate in a first direction,
28 whilst simultaneously transferring a further
29 substrate between the platen and a substrate
30 storage unit;
31 - aligning the further substrate with the printhead
32 while reversing the direction of motion of the
33 printhead;

1 - printing the further substrate by imparting linear
2 movement to the printhead, thereby causing the
3 printhead to traverse the substrate in a second
4 direction opposite to the first.

5

6 24. The method as claimed in any of claims 16 to 23
7 wherein the substrates are mounted on substrate
8 trays.

9

10 25. The method as claimed in Claim 24 wherein the first
11 substrate is one of a set of substrates mounted on a
12 first substrate tray, and the second or further
13 substrate is one of a set of substrates mounted on a
14 second substrate tray.

15

16 26. The method as claimed in Claim 24 or Claim 25
17 wherein the transfer of substrates to or from the
18 platen is by transfer of substrate trays to or from
19 the platen.

20

~~21 27. The method as claimed in any of Claims 16 to 26,~~
22 wherein the steps of the method are repeated for
23 third and additional substrates or substrate trays.